United States Department of Agriculture
Natural Resources Conservation Service
Ecological Site Description

This draft ecological site description is approved for field use and testing for a one-year period beginning 07/2005. Additional information and comments on this site should be sent to the Utah State Range Management Specialist.

State: Utah
Site Type: Rangeland
Ecological Site Name: Upland Gravelly Loam (Wyoming big sagebrush)
Site ID: 028AY307UT
MLRA: D28A
Author: GBB

Interstate Correlation:

Relationship to other classification systems: Western Intermountain Sagebrush Steppe (West 1983)

Associated Sites Within MLRA:
Upland Loam (Wyoming big sagebrush) 028AY309UT
Upland Shallow Loam (Black sagebrush) 028AY318UT
Upland Stony Loam (Wyoming big sagebrush) 028AY334UT

Similar Sites:
Upland Stony Loam (Wyoming big sagebrush) 028AY334UT

I. PHYSIOGRAPHIC FEATURES

This site occurs on lake terraces; alluvial fans and lower foot hills.

Landform and Position: Located on the lower lake terraces and fans made from the cuts through them. These are mainly the Salt Lake formation terraces.

Aspect: all

	Minimum	Maximum
Slope:	6 %	30 %
Elevation:	4200	5350
Water Table Depth		
Flooding:	None	
Ponding:	None	
Run Off Class:	Medium	

II. CLIMATIC FEATURES

The climate is characterized by warm, dry summers, cold, moist winters and fairly moist springs. This climate is modified by local topographic conditions. The mountains appreciably modify both the precipitation and temperature patterns. October to May is the wettest part of the year with July to September being the driest.

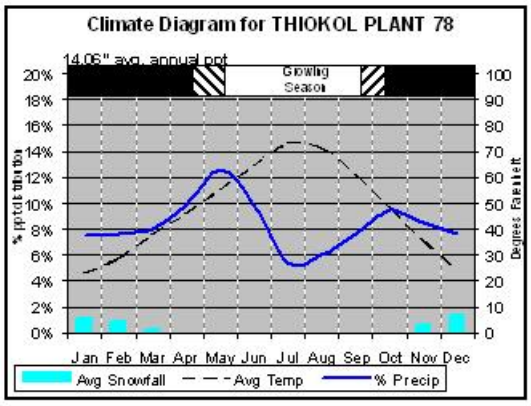
	Minimum	Maximum
Mean Annual Precipitation (inches):	12	16
Frost Free Period (-5°C/22°F) (days):	100	130
Freeze Free Period (0°C/32°F) (days):	85	100

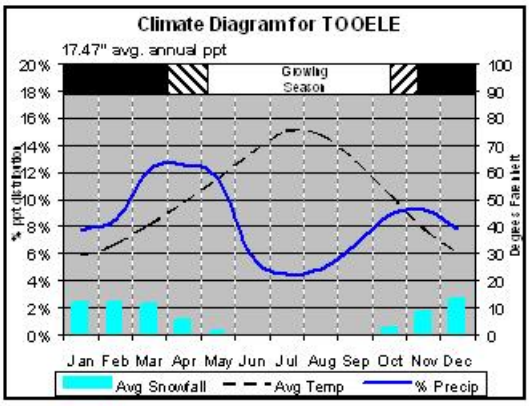
Climate Stations: St. UT. : 428668 Location: Thiokol Plant, Utah Period: From: 1962 To: 2000

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	33.3	40.0	50.5	60.9	70.8	82.4	91.6	90.5	79.4	64.4	46.9	35.4	62.2
Low Mean	12.7	17.1	26.1	31.7	39.4	47.3	54.0	52.8	42.9	31.7	22.7	13.8	32.7
Average Mean	23.0	28.6	38.3	46.3	55.1	64.9	72.8	71.6	61.1	48.2	34.8	24.6	47.4
Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	1.88	2.05	1.90	2.00	3.29	1.94	1.61	1.37	1.97	2.44	1.92	1.70	17.60
Lowest	0.48	0.37	0.58	0.55	0.65	0.23	0.13	1.23	1.26	0.35	0.39	0.21	10.65
Average Mean	1.18	1.20	1.30	1.32	1.99	1.13	0.87	0.86	1.18	1.35	1.17	0.97	14.53

Climate Stations: St. UT. : 428771 Location: Tooele, Utah Period: From: 1897 To: 2005

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	38.4	42.9	51.2	60.4	69.5	79.8	88.3	86.8	76.8	63.5	49	39.1	62.1
Low Mean	20	23.6	30.1	37.5	45.6	54.3	62.2	60.7	51.4	39.9	29.2	21.3	39.7
Average Mean	29.2	33.2	40.7	49	57.5	67.1	75.3	73.7	64.1	51.7	39.1	30.2	50.9
Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	4.74	4.96	4.58	5.99	7.53	3.46	3.47	4.06	8.06	5.29	4.91	3.62	28.32
Lowest	0	0.1	0.29	0.55	0.05	0	0	0	0	0	0	0.01	10.12
Average Mean	1.35	1.49	2.13	2.19	2.01	1	0.78	0.85	1.15	1.55	1.61	1.36	17.47





III. INFLUENCING WATER FEATURES

	System	Subsystem	Class
Wetland Description (Cowardin System)	None	None	None

	System
Stream Types (Rosgen System)	None

SOIL FEATURES

The soils are deep to very deep and well drained Typically the surface layer is dark grayish brown loam and the subsurface layer is brown gravelly loam with gravels extending to 60 inches or to bedrock. These soils are Moderately Alkaline and Moderately Calcareous.

Geologic Parent Materials:
Soils are formed in mixed alluvium derived from limestone, quartzite and sandstone.

Parent Material Origin: Limestone, Quartzite, and Sandstone
Surface Textures: Loam;
Surface Fragments<=3" % cover: 10 -30%
Surface Fragments >3" % cover: 0 – 1%
Subsurface Textures: Loam
Subsurface Fragments <=3"% vol.: 30 – 65%
Subsurface Fragments >3" 5% vol.: 5 – 10%
Depth: 60 inches
Moisture Regime: Aridic
Temperature Regime: Mesic
Permeability (min-max): 0.6 to 2.0 in/hr. (Moderate)
Drainage Class: Well drained
Available Water Capacity (inches): About 5.6 inches (low)
Water Erosion Hazard: Slight
Wind Erosion Hazard: Slight
Electrical Conductivity (EC in mmhos/cm):
Sodium Adsorption Ratio (SAR):
Calcium Carbonate Equivalent (%):
pH Range (1:1 water): 8.3 – 9.0

Major Soils Associated With This Site:

Soil Survey Area	Typical Soil Component	Map Unit
West Box Elder (601)	Collard	19
	Hupp	19; 22
	Donnardo	28; 29;43
Box Elder East (602)	Abella	ABE
	Blue Star	BgE; BLG
	Hupp	HpB; HpD
	Sandall	SHE
Tooele (611)	Abela	1
Golden Spike National Monument East Box Elder UG	Abela	ABE; PSR
	Sterling	ABE; SRP; SsB;SsD
	Hupp	ABE; KeC;SsB; SsD
	Sanpete	KgD; PAB; PwE; PwG2
	Windmill	SvB

Additional information may be found in Section II of the Field Office Technical Guide.

IV. PLANT COMMUNITY CHARACTERISTICS

The interpretive plant community for this site is the historic climax community (HCPC). Dominant vegetative aspect is Wyoming big sagebrush and Bluebunch wheatgrass with other grasses and forbs in the interspaces. This site is usually associated with Salt Lake formation terraces. The air-dry composition weight is 50% perennial grasses, 15% forbs and 35% shrubs. Plants begin growth around April 20 and end growth around September 15. The HCPC has been determined by the study of rangeland relic and areas in good condition areas, the evaluation of collected data, and trend data. The assumptions in developing this site were that the historic data and the sites visited were accurately represented.

The plant composition table has been developed with the best available knowledge at the time of this revision. The list of plants and their relative proportions are based on normal years. Fluctuations in species compositions and relative production may change from year to year dependant upon abnormal precipitation or other climatic factors.

Common Name	National Symbol	Total Annual Production		
		Group	Lbs. / Acre	% by Weight of Total Composition
Grasses and Grass Likes		0		40 - 60 %
Bluebunch wheatgrass	PSSP6	0	162 – 330	25 – 30
Slender wheatgrass	ELTR7	0	33 - 110	5 - 10
Western wheatgrass	PASM	0	3 - 110	5 - 10
Group 1		1		5 - 10 %
Muttongrass	POFE	1	20 - 55	3 - 5
Bottlebrush squirreltail	ELEL5	1	7 - 33	1 - 3
Nevada bluegrass	PONE3	1	20 - 55	3 - 5
Sandberg bluegrass	POSA12	1	20 - 55	3 - 5
NeedleandThread	HECO26	1	7 - 55	1 - 5
Indian ricegrass	ACHY	1	7 - 55	1 - 5
Other Perennial Native Grasses	PPGG	1	33 - 110	5 - 10
Other Annual Native Grasses	AAGG	1	20 - 55	3 - 5

Common Name	National Symbol	Total Annual Production		
		Group	Lbs. / Acre	% by Weight of Total Composition
Forbs		0		7 - 20 %
Louisiana sagewort (White sagebrush)	ARLUC8	0	20 - 55	3 - 5
Tapertip hawksbeard	CRAC2	0	20 - 55	3 - 5
Group 2		2		1 – 10 %
Shaggy Fleabane	ERPU2	2	7 - 33	1 - 3
Longleaf Phlox	PHLO2	2	7 -33	1 - 3
Torrey’s milkvetch	ASCA9	2	7 - 33	1 - 3
Lobeleaf groundsel	PAMU11	2	7 - 33	1 - 3
Desert parsley (Gray’s biscuitroot)	LOGR	2	7 - 33	1 - 3
Low beardtoung	PEHU	2	7 - 33	1 - 3
Carpet Phlox	PHHOC	2	7 - 33	1 - 3
Sego Lilly	CANU3	2	7 - 33	1 - 3
Owl clover	ORLU2	2	7 - 33	1 - 3
Other Perennial Native Forbs	PPFF	2	33 - 110	5 - 10
Other Annual Native Forbs	AAFF	2	33 - 110	5 - 10

Common Name	National Symbol	Total Annual Production		
		Group	Lbs. / Acre	% by Weight of Total Composition
Shrubs		0		33 - 45 %
Wyoming big sagebrush	ARTRW8	0	163 - 330	25 - 30
Antelope bitterbrush	PUTR2	0	33 - 110	5 - 10
Group 3		3		3 – 5 %
Slender Shrubby Buckwheat	ERMI4	3	7 - 33	1 - 3
Spineless Horsebrush	TECA2	3	7 - 33	1 - 3
Low rabbitbrush (Yellowbrush)	CHVI8	3	7 - 33	1 - 3
Broom Snakeweed	GUSA2	3	0 - 22	0 - 2
Other Native Shrubs	SSSS	3	33 - 110	2 - 5

Historic Climax Community Annual Production
At the highest potential similarity index, this site will produce approximately the following amount of air-dry herbage, expressed as pounds/acre under favorable, normal, and unfavorable growing conditions. Growing conditions include a function of many variables including temperature, soil moisture, amount and distribution of precipitation. These values also represent variability in the amount of herbivory from micro fauna and small mammals:

Production

	Low	High
Favorable Year	1100	1200
Normal Year	650	1100
Unfavorable Year	300	500

Composition

	Low	High
Gasses and Grasslikes	40	60
Forbs	7	20
Shrubs	33	45
Trees	0	0

Historic Climax Community Ground Cover and Structure

Cover Type	Percent Canopy Cover	Height Range	Percent Basal Area Cover
Grasses & Grass-like (perennial)	20-30	18 in. – 26 in.	10
Forbs (perennial)	7-12	1 in. – 12 in.	3
Shrubs	15-25	10 in. – 40 in.	5
Trees	0-1	0	0
Cryptogams	1-3	0.25 in.	1
Litter	10-20		
Coarse Fragments	10-15		
Bare Ground	15-25		

V. ECOLOGICAL DYNAMICS OF THE SITE

(Includes a discussion of serial stages; fire influence and effects; effects of prolonged wet or dry periods; resistance to change; the influence of such things as grazing, rodent concentrations, insects, diseases, introduced species, and soil erosion or deposition; other stable vegetative states associated with this site as a result of extreme disturbance)

Plant Communities & Transitional Pathways

As vegetation communities respond to changes in management or natural occurrences, thresholds can be crossed, which usually means that a reversal of direction is probably not possible without major energy input. The amount of energy input needed to effect vegetative shifts depends on what the present vegetation is and the desired results.

The following diagram does not necessarily depict all the transition and states that this site may exhibit, but it does show some of the most common plant communities that can occur on the site and the transition pathways (arrows) among the communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes are discussed in detail, including photos, in the Plant Community Narrative section.

Upland Gravelly Loam (Wyoming Big Sagebrush)

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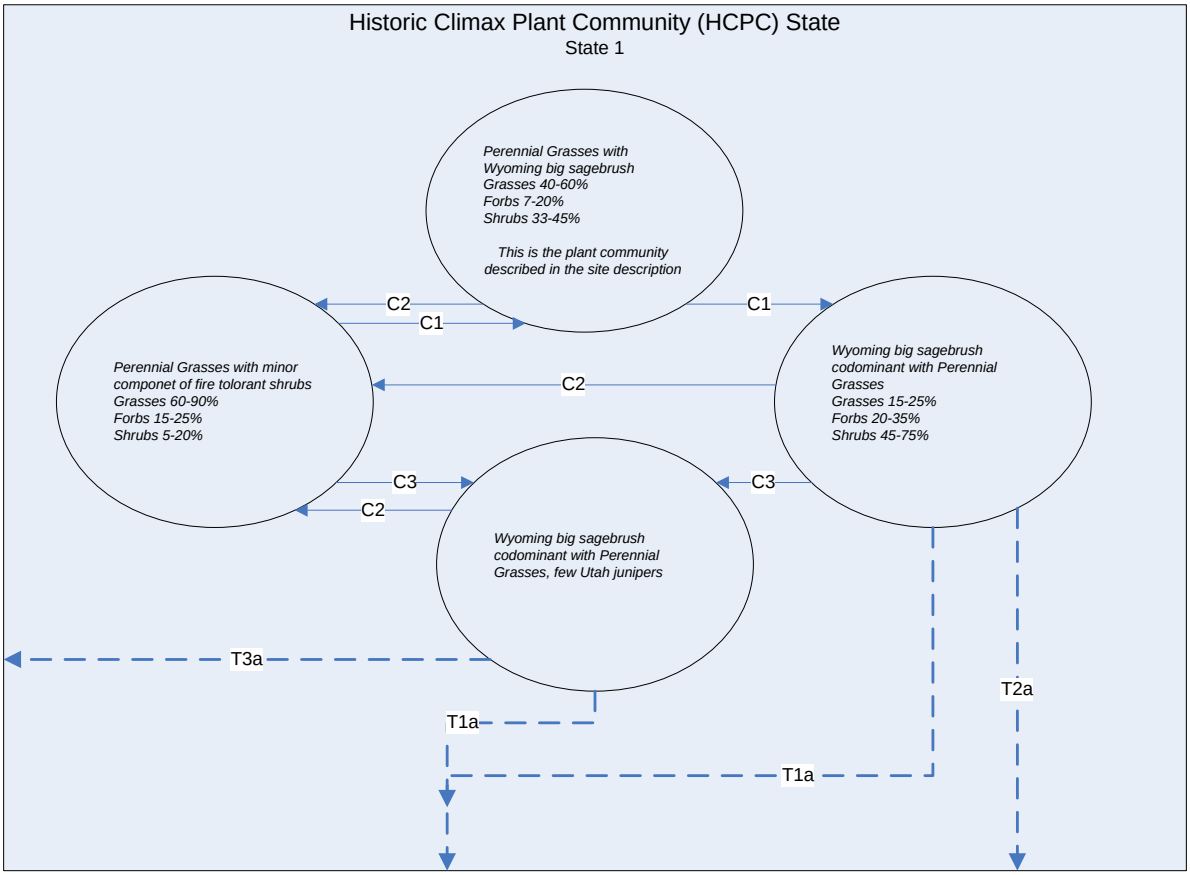

Upland Gravelly Loam (Wyoming Big Sagebrush)

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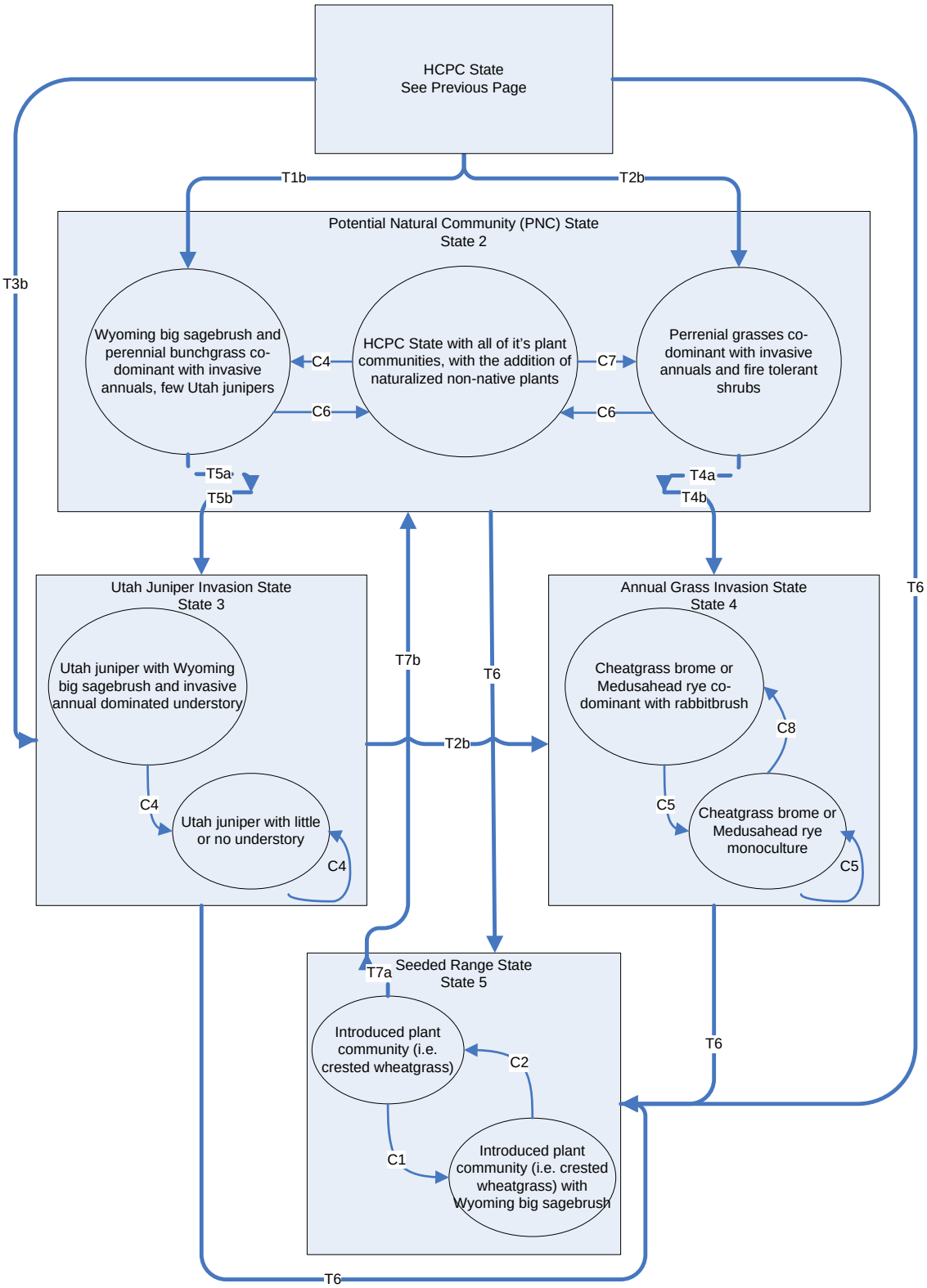


Community Pathways

C1 = Time without catastrophic event. This was probably dependent on a specific chain of climatic events

C2 = Disturbances: fire; insects; prolonged drought; pathogens that kills and/or reduces the sagebrush and/or Utah juniper over story and releases the perennial grass and forb understory community. Fire is the most effective of these disturbances and is the only effective one where Utah juniper is involved.

C3 = Invasion of Utah juniper due to lack of fire. This normally happens when the sagebrush over story starts to severely reduce the herbaceous under story and the fire frequency is increased from 50 – 60 years to 70 – 90 years with a source of juniper seed available.

C4 = Disturbance: Overgrazing or drought over a prolonged period of time with no fire or other disturbance occurring to move the plant community In the Loop shown in the Utah Juniper invasion State (3) this condition is self sustaining and the site will keep deteriorating in a downward spiral until the site potential is lost. This will continue unless a large amount of energy is injected into the system to cause a change to take place.

C5 = Disturbance: Increased fire frequency (from 10 - 15 years to 3-5 years) and intensity without follow-up management. Overgrazing can move this change along faster. In the loop shown in the Annual Grass Invasion State (4) the fire frequency will remain at a 3 – 5 year interval. This condition is self sustaining and the site will keep deteriorating until the site potential is lost. This will continue unless a large amount of energy is injected into the system to cause a change to take place.

C6= Time and management of grazing alone or along with other disturbances where human and/or naturalized introduction of native and/or introduced perennial plant species takes place.

C7 = Disturbance: Overgrazing and shortening of the fire interval frequency from 15 – 20 years to 10 – 15 years and the increase of invasive annual grass species and the increase of fire intensity.

C8 = Disturbance: Lengthening of the fire frequency interval from 3 – 5 years to 15 – 20 years.

Transitions

T1a = Disturbance: Overgrazing; Extreme lengthening of the fire interval frequency or prolonged drought. This takes place when the sagebrush canopy gets so heavy that it destroys the perennial grass and forb under story and the fire frequency is increased from 50- to 60 years to 70 – 90 years.

T1b = Disturbance: Overgrazing; Extreme lengthening of the fire interval frequency or prolonged drought. This takes place when the sagebrush canopy gets so heavy that it destroys the perennial grass and forb under story and the fire frequency is increased from 50- to 60 years to 70 – 90 years followed by the introduction of seed from invasive annual grass species and Utah Juniper.

T2a = Disturbance: Shortening of the fire interval frequency from 50 – 60 years to 15 – 20 years and the introduction of invasive annual grass species.

T2b = Disturbance: Shortening of the fire interval frequency from 15 – 20 years to 10 – 15 years and the introduction of invasive annual grass species and the increase of fire intensity.

T3a = Disturbance: Decrease of fire frequency from 50 – 60 years to 70 – 80 years.

T3b = Disturbance: Additional Decrease of fire frequency from 70 – 80 years to 75 – 200 years.

T4a = Disturbance: Overgrazing and increase of fire frequency over a very prolonged period of time. (10 – 15 year fire frequency interval)

T4b = Disturbance: Continued overgrazing and increase of fire frequency over a very prolonged period of time. (8 – 12 year fire frequency interval)

T5a = Prolonged Drought and/or Overgrazing and/or Extreme lengthening of the fire interval frequency. This takes place when the sagebrush canopy gets heavy enough that it starts to destroy the perennial grass and forb under story and the fire frequency is increased from 50- to 60 years to 70 – 90 years.

T5b = Prolonged Drought, Overgrazing, Extreme lengthening of the fire interval frequency. This takes place when the sagebrush canopy gets so heavy that it destroys the perennial grass and forb under story and the fire frequency is increased from 50- to 60 years to 70 – 90 years followed by the introduction of Utah juniper.

T6 = Disturbance: Human caused disturbance (mechanical treatment and seeding; chemical treatment and seeding. etc.)

T7a = Time with proper management that favors the Native Plants as they move back into the site.

T7b = The same as T6a extended over a longer period of time allowing more Natives to move into the site and all of the Native species on site to increase.

Note: Chemical treatment can be used as a replacement for fire where ever fire is shown to affect sagebrush in the Model.

Plant Community Narratives

The following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. As more data is collected, some of these plant communities way be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as the “desired plant community”. According to the USDA NRCS National Range and Pasture Handbook, the desired plant community will be determined be the decision makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision

Historic Climax Plant Community State (HCPC)

This state includes the plant communities that were best adapted to the unique combination of factors associated with this ecological site prior to European settlement. It was in a natural dynamic equilibrium with the historic biotic, abiotic, climatic factors on its ecological site in North America at the time of European immigration and settlement. This dominant aspect of the plant community is Wyoming big sagebrush and Bluebunch wheatgrass. The community is made up of 50 % Grass 15 % forbs and 35 % shrubs on a dry weight base.

Insert picture

Growth Curve

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Percent Growth	0	0	1	9	30	45	5	5	5	0	0	0
Name	Cool Season Bunch Grass - Wyoming big sagebrush - Gravelly Loam Soil											
ID Number	UT 28A 301											

Potential Natural Community State (PNC)

This state includes the biotic communities that would become established on the ecological site if all successional sequences were completed without interferences by man under the present environmental conditions. Natural disturbances are inherent in its development. The PNC state may include acclimatized, naturalized or invasive nonnative species. There is no known way to effectively remove these plants from the site once they have become established. The level of occurrence of these plants in the PNC is such that careful management can prevent their domination of the site. This site is irreversibly changed. Plant communities within the PNC state may be managed and used for various purposes by man without significant alteration in plant community composition or production. It includes all of the plant communities that exist in the HCPC state with the inclusion of nonnative species. Additional plant communities with significant portions of invasive annuals are also possible within this state.

Insert Picture

Annual Grass Invasion State

This is the state that this plant community will move to when it is in an over grazed condition and/or drought condition and then burned (wild or controlled) and not seeded. The dominant aspect of the plant community is Cheatgrass brome and Wyoming big sagebrush. The community will usually be made up of 70 % Cheatgrass brome and 10 % Forbs and 20 % Wyoming big sagebrush with minor components of other shrubs.

Insert picture

Growth Curve

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Percent Growth	0	0	10	15	25	35	5	5	5	0	0	0
Name	Cheatgrass Brome – Wyoming big sagebrush											
ID Number	UT 28A 302											

Utah Juniper Invasion State

This is the state that this plant community will move to when there is a lack of fire with a souce of juniper seeds. Movement into this state can be accesllerated by overgrazing. The dominant aspect of the plant community is Utah juniper and Cheatgrass brome. This state can persist for a long time until extreme conditions needed for a wildfire occur or some other management treatment is implemented.

Insert Picture

Seeded Range State

This is a state that results from a significant vegetation manipulation that may include prescribed burning, chaining, disking, mowing, or other techniques with the introduction of non-native perennial grasses such as crested wheatgrass or Russian wildrye. This state may persist for long periods of time. Typically sagebrush will establish in the sedng to significant proportions within 30 years. Under careful management, native grasses and forbs will become re-established in this plant community over a long period of time, allowing a transition back to the PNC state over 100-150 years. Actively manipulating plant communities in the annual grass or juniper invasion states to create a seeded range state is the first step in assisted succession to restore plant communities.

Insert picture

VI. Ecological Site Interpretations

Threatened, Endangered and Sensitive Species

Plants – This section will be completed as information is available.

Animals – This site is home to Greater Sage-Grouse (Centrocercus urophasianus) and a seasonal home to Northern Goshawk. Pygmy Rabbit (Brachylagus idahoensis) use this site if there are inclusions of deeper, stone free soils nested within the site.

Wildlife Interpretation

This site is a part of the sagebrush steppe supporting populations of Greater Sage-grouse (Centrocercus urophasianus), Columbian Sharp-tailed Grouse (Tympanuchus phasianellus columbianus), other at-risk neotropical migratory bird species, pygmy rabbit (Brachylagus idahoensis) on deep stone free inclusions, Utah prairie-dog (Cynomys parvidens), white-tailed prairie-dog (Cynomys leucurus), or Gunnison's prairie-dog (Cynomys gunnisoni). Other wildlife using this site include Black-tail Jackrabbit; Coyote; Gold Eagle; Ravens and Mule Deer. This is a short list of the more common species found. Many other species are present as well and migratory birds are present at certain times of the year.

Information about unique wildlife use in each steady state should be added

Guide to Forage Preference of Managed Wildlife Species

	Mule Deer					Elk			
Season	F	W	Sp	Su		F	W	Sp	Su
Bluebunch wheatgrass	B	C	A	C		B	B	A	A
Slender wheatgrass	B	C	A	C		A	B	A	A
Western wheatgrass	C	C	A	C		B	B	A	B
Muttongrass	B	C	A	C		A	B	A	A
Bottlebrush squirrltail	B	C	B	C		B	C	B	C
Nevada bluegrass	B	C	A	C		A	B	A	A
Sandberg bluegrass	C	C	A	C		C	C	A	C
NeedleandThread	B	C	B	C		B	B	A	B
Indian ricegrass	B	C	A	C		B	C	A	A
Louisiana sagewort	B	B	B	B		B	C	A	B
Tapertip hawksbeard			A	B				A	B
Shaggy Fleabane	C		B	B		C		B	C
Longleaf Phlox			B	B				B	C
Torrey’s Milkvetch			C	C				C	C
Lobeleaf Groundsel			B	B				B	C
Desert parsley			A	B				A	B
Low beardtoung			A	B				B	B
Carpet Phlox			B	C				B	C
Sego lilly			B	B				B	B
Owl clover			B	C				B	C
Wyoming big sagebrush	B	B	B	B		B	B	B	B
Antelope bitterbrush	A	A	A	A		A	A	B	B
Slender Shrubby Buckwheat	C	C	B	B		C	C	B	B
Spineless Horsebrush	B	B	B	B		B	B	C	C
Low rabbitbrush	C	C	C	C		C	C	C	C

Broom snakeweed	C	C	C	C		C	C	C	C

Use - A = preferred or desirable
B = some use, but less important
C = little use or used occasionally

Season - F = fall (Oct-Nov)
W = winter (Dec-Feb)
Sp. = spring (Mar-May)
Su. = summer (Jun-Sep)

Grazing Interpretations

The suitability for livestock grazing is fair to good. This site provides grazing for cattle and sheep during the spring, summer, and fall.

Guide to Forage Quality (Plant preference by season)

	Cattle					Sheep			
Season	F	W	Sp	Su		F	W	Sp	Su
Bluebunch wheatgrass	VG	VG	VG	VG		G	G	VG	G
Slender wheatgrass	VG	G	VG	VG		G	G	VG	VG
Western wheatgrass	G	G	G	G		F	F	G	G
Muttongrass	G	F	G	G		G	F	F	F
Bottlebrush squirreltail	G	VG	G	F		F	F	G	F
Nevada bluegrass	G	F	G	G		G	F	G	F
Sandberg bluegrass	G	F	VG	G		G	F	VG	F
NeedleandThread	F	F	G	F		F	F	G	F
Indian ricegrass	VG	VG	VG	VG		G	VG	VG	G
Louisiana sagewort	F	F	F	F		F	F	VG	G
Tapertip hawksbeard	P		F	F		P		G	F
Shaggy fleabane	P		P	P		P	P	F	F
Longleaf Phlox	P		F	P		G	P	G	G
Torrey’s milkvetch	T	T	T	T		T	T	T	T
Lobeleaf groundsel	P	P	F	P		F	F	G	G
Desert parsley	P		F	P		F		G	G
Low beardtoung	P		F	P		F		F	F
Carpet Phlox	P		P	P		F		F	F
Sego lilly			F	P				G	F
Owl clover			F	P		P		F	P
Wyoming big sagebrush	P	P	P	F		F	G	F	F
Antelope bitterbrush	G	G	G	F		VG	VG	VG	G
Slender Shrubby Buckwheat	F	F	G	F		G	F	G	G
Spineless Horsebrush	P	P	P	P		P	P	T	P

Low rabbitbrush	P	P	P	P		P	P	P	P
Broom Snakeweed	P	P	T	T		P	P	T	T

Use : VG = Very Good
G = Good
F = Fair
P = Poor
t = Toxic

Season: F = fall (Oct-Nov)
W = winter (Dec-Feb)
Sp. = spring (Mar-May)
Su. = summer (Jun-Sep)

Recreational Uses

Recreation activities include aesthetic value; and fair opportunities for hiking and hunting.

Wood Products

There are no wood products from this site unless there is Utah Juniper invasion onto the site. With this event you will be able to harvest Cedar posts and firewood.

Other Uses

The Hydrologic group is B

Supporting Information

Modal Location and Documentation

State: UT County: Box Elder
Latitude: Longitude:
Section: Township: Range:

General Legal Description:

Field Office Site Location
Tremonton
Tooele

Data Collected and References

Sampling Source	Number of Records	Range Similarity Index			
		> 76%	51-75%	26-50%	0-25%
NRCS - ECS - 417	1			1	
UTAH - RANGE - 2	6		2	3	1
Permanent Transect Location					

Authors
Original Site Description: Author: DJS Date: 02 / 08 / 1994
Revised Site Description: Author: GBB Date: 03 / 10 / 2004

Approved by:
Title:
Signed:
Date:

Ecological Reference Worksheet
028A307UT Upland Gravelly Loam (Wyoming big sagebrush)

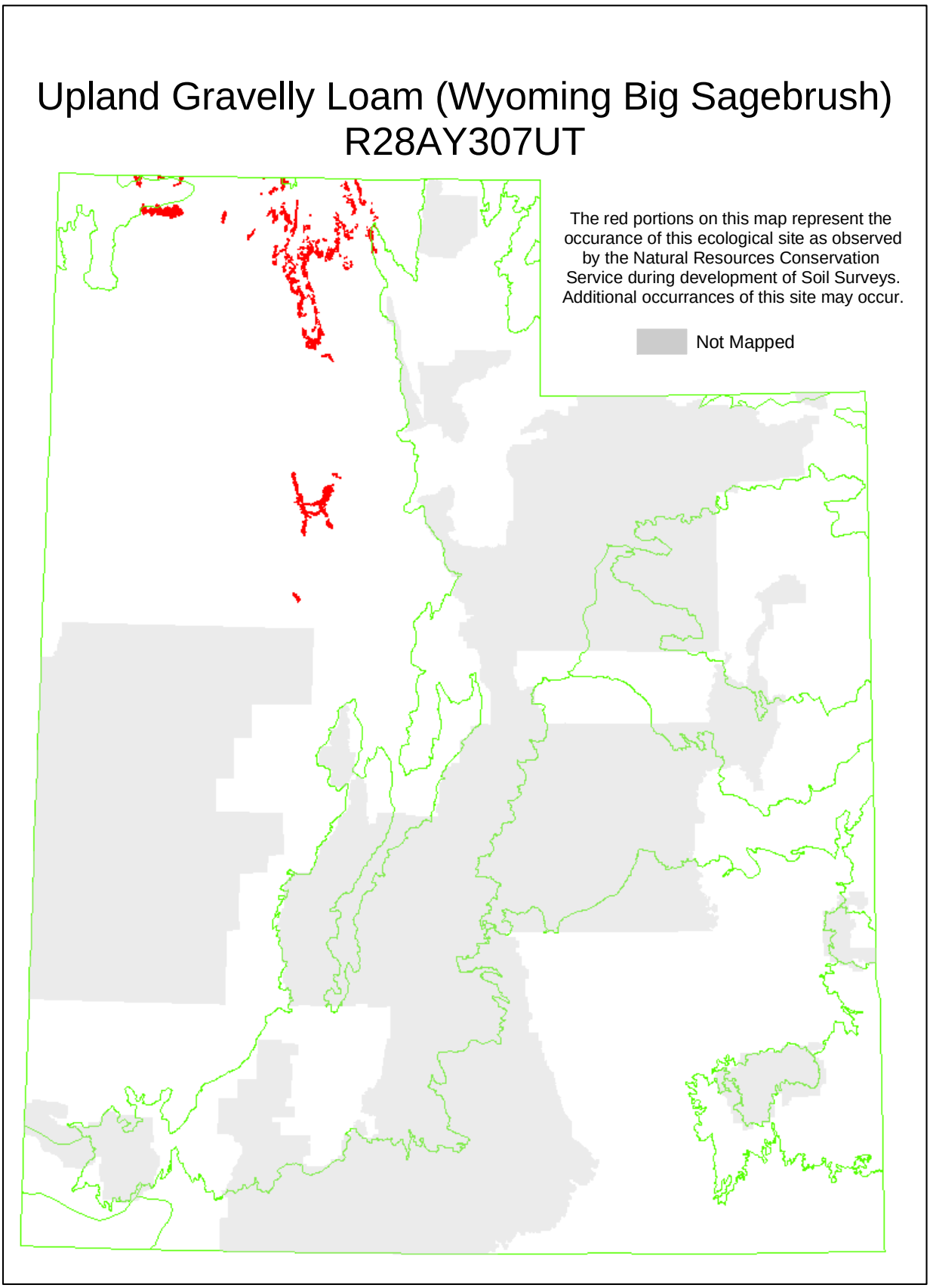
Author(s)/participant(s): B. Benson
Contact for lead author: shane.green@ut.usda.gov

Date: 03/10/05
Reference site used? No

Ecological Site must be verified based on soils and climate (see Ecological Site Description). Current plant community cannot be used to identify the ecological site. Intended use: When developing these sheets, for each indicator we tried to describe the historic plant community characteristics for the site. Where possible we, (1) use numbers, (2) included expected range of values for above- and below-average years for each community within the reference state when appropriate & (3) cite data. Descriptions continued on separate sheet.

1. Number and extent of rills: None to few. Any rills present should be short in length (less than 1.5 feet long) and follow the surface micro-features. Old rills will weather quickly because of loamy surface textures. A slight increase in rill formation may be caused by major disturbance events such as severe thunderstorms.
2. Presence of water flow patterns: Flow patterns around perennial plants bases will show minor evidence of erosion. They will be short (1 to 3 feet long) and look stable. There is slight evidence of deposition.
3. Number and height of erosional pedestals or terracettes: Plants should show slight (1/8 – ½ in.) pedestialing. Pedestialing on the down slope side of plants may appear to be greater than this and will be more visible as slopes increase. Terracettes should be absent until slopes are greater than 20 %. At this point the terracettes should look stable and have no evidence of soil being re-deposited.
4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): 15 to 40 % (15 – 25 % on slopes up to 25 % and 25 – 40 % on slopes from 25 % up)
5. Number of gullies and erosion associated with gullies: None to very few. Any gullies present should show little sign of active erosion and should appear stable having perennial plants growing in the bottom and on the sides.
6. Extent of wind scoured, blowouts and/or depositional areas: Slight wind generated soil movement is normal. Wind caused blowouts are very rare and are mostly stable and have healed over or started to do so. Increased wind generated soil movement can occur after severe wind events but will not be visually apparent.
7. Amount of litter movement (describe size and distance expected to travel): Little redistribution can be caused by both wind and water. Very fine to fine litter movement may occur in water flow patterns with deposition occurring at points of obstruction. Fine litter may be removed from the site by wind action.
8. Soil surface (top few mm) resistance to erosion (stability values are averages – most sites will show a range of values for both plant canopy and interspaces, if different): 80 to 90% of this site should have soil surfaces that are stabilized by organic matter both decompositional and incorporated (Stability Class 4). This should be observable in that water flow patterns are not scoured to where the surface is visibly smoother than soil surfaces in non flow pattern areas.

9. Soil surface structure and SOM content (include type and strength of structure, and A- horizon color and thickness for both plant canopy and interspaces, if different): The A horizon is varies from 5 to 16 inches thick. Color is a grayish brown gravelly loam (typical mollic colors). Structure should be granular.
10. Effect of plant community composition (relative proportion of different functional groups) & spatial distribution on infiltration & runoff: When perennial plant community is intact it will maintain the organic granular structure, soil porosity, and sinuous water flow paths that allows water to infiltrate at a rate that will not lend to water leaving the site. If the plant community has been degraded then the site will show longer and/or smoother than expected water flow patterns, with increased numbers of and/or longer rills, and a more platy structure.
11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): There should be no compaction layer. The amount of gravel can make it hard to use a probe to determine this.
12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: », >, = to indicate much greater than, greater than, and equal to): Assumed fire cycle of 50-60 years. Perennial bunchgrasses > non-sprouting shrubs > rhizomatous grasses > sprouting shrubs » annuals > invaders such as Cheatgrass brome For example, Dominants: Wyoming big sagebrush, Bluebunch wheatgrass; Sub-dominants: Slender Wheatgrass, Western wheatgrass, Antelope bitterbrush. The perennial bunchgrass about 35 to 40 %; non-sprouting shrub 30 to 35 % (composition by biomass) functional groups are expected on this site.
13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): All age classes (seedling, immature, mature, and decadent) of perennial bunchgrasses and non-sprouting shrubs should be present. The % of decadent and/or dead plants should not exceed 5 %.
14. Average percent litter cover: 15 to 35 % of the ground surface should have a litter covering that is within 1 inch or less of the soil surface.
15. Expected annual production (this is TOTAL above-ground production, not just forage production): 650 – 950 lb./acre on slopes 20 to 30 % and 800 to 1100 lb./acre on slopes less than 20 % under normal growing conditions.
16. Potential invasive (including noxious) species (native and non-native). List species which characterize degraded states and which, after a threshold is crossed, "can, and often do, continue to increase regardless of the management of the site and may eventually dominate the site": As ecological condition deteriorates due to outside disturbances, perennial bunch grasses decrease while less desirable plants like Low rabbitbrush, and Pricklypear increase along with invasive plants like Cheatgrass brome and Utah juniper. When the historic climax plant community is burned, Wyoming big sagebrush will decrease while perennial grasses, forbs and Low rabbitbrush increase markedly. Broom snakeweed and Antelope bitterbrush increase to a much lesser extent. If the site is burned too frequently Cheatgrass brome, Halogeton, Broom snakeweed and Russian thistle are most likely to invade this site and eventually dominate it.
17. Perennial plant reproductive capability: All plants should have the ability to reproduce either by seed and/or vegetative tillers in all years, except after prolonged extreme drought years.


Upland Gravelly Loam (Wyoming Big Sagebrush)
R28AY307UT
The red portions on this map represent the occurance of this ecological site as observed by the Natural Resources Conservation Service during development of Soil Surveys. Additional occurrances of this site may occur.
Not Mapped